



# ESTIMATION OF ORGANIC SOLVENT EXTRACTS OF ACHYRANTHES ASPERA PLANTS

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## ABSTRACT

The plant species *Achyranthes aspera* from the family *Amaranthaceae* is a vital healthful and medicated herb found throughout in India. Although most of its components are employed in ancient systems of medicines such as seeds, roots and shoots are foremost necessary components that are used for treatment of disease. The objective of this research is to conduct the preliminary phytochemical screening, of *Achyranthes aspera*. *Achyranthes aspera* leaves, stem and root were collected in march. Extracts of plants parts were prepared using solvents like organic solvents (methanol, ethanol, ethyl acetate, acetone). It prepare to the extraction, screening and identification of the medicinally active substances found in plants. Some of the bioactive substances that can be derived from plants are carbohydrate, protein, flavonoids, alkaloids, tannin, and phenolic compounds.

## I. INTRODUCTION:

*Achyranthes aspera* is an erect or prostrate, annual or perennial herb about 1m to 2m high. Leaves are opposite, margins undulate. Flowers: numerous, stiffly deflected against the pubescent rachis in elongate terminal spike, 20-30 cm. long. Seeds are oblong-ovoid. *Achyranthes aspera* has been extensively used in Ayurveda as an anti-inflammatory agent besides being useful in Hemorrhoids, indigestion, cough, asthma, anemia, jaundice and snake bite. To instantly get rid of cough, read more about cough home remedies.

## II. MATERIALS AND METHODS:

### A. Sample Collection:

The entire plant samples were collected in March 2018.

### B. Preparation Of Plant Extracts Using Aqueous And Organic Solvents:

Extracts of various plants parts (leaves stem and Root) of *Achyranthes aspera* were prepared using solvents like organic solvents (methanol, ethanol, ethyl acetate, acetone). Fresh plant parts collected were surface sterilized with 0.1% HgCl<sub>2</sub> and washed repeatedly with sterile phosphate buffer saline (pH 7.2) followed by distilled water. Plant parts were than dried at 500C using electric drier and crushed with the aid of a mechanical grinder to powdered form. These powdered plant parts were used to prepare different extracts as described below.

### 1) Organic solvent extracts:

The dried samples were ground to coarse powder form and phyto-constituents were extracted by Soxhlet extractor at 60°C using various solvents like methanol, ethanol, ethyl acetate and acetone. The extracts were evaporated to dryness on the rotary evaporator and stored in a refrigerator at 4°C until required for use. Dry weight of powder before and after extraction was taken to calculate expected total amount of phyto-constituents extracted with given solvent.

### C. Qualitative Estimation Of Phytoconstituents:

These extract were subjected to chemical test for different phytoconstituents viz. alkaloids, carbohydrates, phenolics, flavonoids, proteins, amino acids, saponins using the standard procedures described (Gupta and Sharma, 2011; Tease and Evans, 1989).

### Test for Proteins & Amino acids:

- Ninhydrin test:** To the 2 ml extract 2 ml on ninhydrin reagent was added & boil for few minutes, formation of bluish purple colour indicates the presence of amino acid.
- Biuret's Test:** To 1 ml of test extract, 4% of sodium hydroxide solution and few drops of 1% copper sulphate solution were added. Formation of a violet red colour indicated the presence of proteins.

### Test for Carbohydrates:

- Molisch's Test:** Filtrates were treated with 2 drops of alcoholic alpha-naphthol solution in a test tube. Formation of the violet ring at the junction indicates the presence of carbohydrates.
- Fehling's Test:** Filtrates were hydrolyzed with dil. HCl, neutralized with alkali and heated with Fehling's A&B solutions. Formation of red precipitate indicates the presence of reducing sugars.

### Test for Coumarin:

3 ml of 10% NaOH was added to 2 ml of aqueous extract formation of yellow col-

our indicates coumarins.

### Test for Diterpenes:

**Copper acetate Test:** Extracts were dissolved in water and treated with 3-4 drops copper acetate solution. Formation of emerald green colour indicates the presence of diterpenes. (Roopashree, et al., 2008 and Audu, et al., 2007).

### Test for saponins:

One mL of the tepal extract was diluted with distilled water to 20 ml and shaken in a graduated cylinder for 15 minutes. The formation of one centimeter layer of foam indicates the presence of saponins.

### Test for Alkaloids:

- Mayer's Test:** Filtrates were treated with Mayer's reagent (potassium Mercuric Iodide). Formation of a yellow colored precipitate indicates the presence of alkaloids.
- Wagner's Test:** Filtrates were treated with Wagner's reagent (Iodine in Potassium Iodide). Formation of brown/reddish precipitate indicates the presence of alkaloids.

### Test for Flavonoids:

- Alkaline Reagent Test:** Extracts were treated with few drops of sodium hydroxide solution. Formation of intense yellow colour, which becomes colourless on addition of dilute acid, indicates the presence of flavonoids.

### Test for Tannins:

- Lead acetate Test** Few drops of 1% lead acetate were added to 2 ml of extract. The formation of yellowish precipitate indicated the presence of tannins.
- Ferric Chloride Test:** Extract solutions were treated with 5% ferric chloride solution. As per Culet et al., (2010) formation of blue colour indicated the presence of hydrolysable tannins and formation of green colour indicated the presence of condensed tannins.

## III. RESULT AND DISCUSSION:

**Table 1: Preliminary phytoconstituents analysis of *Achyranthes aspera* leaves**

Achyranthes aspera leaves Extracts					
S.No.		Methanol	Ethanol	Ethyl acetate	Acetone
1.	Carbohydrate test				
a.	Molish's test	+	+	+	+
b.	Fehling's test	+	+	-	-
2.	Protein test				
a.	Ninhydrin test	+	+	-	-
b.	Biuret test	+	+	-	-
3.	Tannins				
a	Lead acetate Test	-	-	-	+

b	Ferric Chloride Test	+	+	-	+
4.	Saphonin	-	+	-	-
5.	Flavanoid	+	+	-	-
6.	Alkaloid test				
a.	Mayer's test	-	+	-	+
b.	Wegner's test	+	+	+	+
7.	Coumarin	+	+	+	+
8.	Diterpenes	-	+	-	-

**Table 2: Preliminary phytoconstituents analysis of *Achyranthes aspera* stem**

Achyranthes aspera Stem Extracts					
S.No.		Methanol	Ethanol	Ethyl acetate	Acetone
1.	Carbohydrate test				
a.	Molish's test	+	+	+	+
b.	Fehling's test	+	+	-	-
2.	Protein test				
a.	Ninhydrin test	+	+	-	-
b.	Biuret test	+	+	-	-
3.	Tannins				
a	Lead acetate Test	-	-	-	-
b	Ferric Chloride Test	+	+	-	+
4.	Saphonin	-	+	-	-
5.	Flavanoid	+	+	-	-
6.	Alkaloid test				
a.	Mayer's test	+	+	-	+
b.	Wegner's test	+	+	+	+
7.	Coumarin	-	+	+	+
8.	Diterpenes	+	+	-	-

**Table 3: Preliminary phytoconstituents analysis of *Achyranthes aspera* Root**

Achyranthes aspera Root Extracts					
S.No.		Methanol	Ethanol	Ethyl acetate	Acetone
1.	Carbohydrate test				
a.	Molish's test	+	+	+	+
b.	Fehling's test	+	+	-	-
2.	Protein test				
a.	Ninhydrin test	+	+	-	-
b.	Biuret test	+	+	-	-
3.	Tannins				
a	Lead acetate Test	-	-	+	+
b	Ferric Chloride Test	+	+	+	+
4.	Saphonin	-	+	-	-
5.	Flavanoid	-	+	-	-
6.	Alkaloid test				
a.	Mayer's test	+	+	-	+
b.	Wegner's test	-	+	+	+
7.	Coumarin	+	+	+	+
8.	Diterpenes	-	+	-	-

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